REMARKS/ARGUMENTS

Amendments have been made to the specification and sequences from the text and figures have been incorporated into the sequence listing. In response to the Formalities Letter of November 1, 2001, applicants include with this response a Sequence listing and a Computer Readable Form of the Sequence Listing. The undersigned hereby states that the Paper Copy and the Computer Readable Form submitted in accordance with 37 CFR§ 1.821 are identical. No new matter has been added by these amendments.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page(s) is/are captioned "Version with markings to show changes made". Favorable consideration is respectfully requested.

Respectfully submitted,

By: _____

John W. Harbour
Reg. No. 31,365

Johnson & Johnson
One Johnson & Johnson Plaza
New Brunswick, NJ 08933-7003
(732) 524-2169
Dated: January 2, 2002

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The paragraph beginning at page 8, line 31, has been replaced with the following rewritten paragraph:

--**Figure 2.** Partial amino acid sequences of native codeinone reductase. Peptide 3 is SEQ ID NO: 9, Peptide 7 is SEQ ID NO: 10, Peptide 14 is SEQ ID NO: 11, Peptide 16 is SEQ ID NO: 12, Peptide 17 is SEQ ID NO: 13, Peptide 25 is SEQ ID NO: 14, and Peptide 29 is SEQ ID NO: 15.--

The paragraph beginning at page 9, line 7, has been replaced with the following rewritten paragraph:

-- Codeinone reductase peptides 3, 7, 14, 16, and 17 aligned with the reductase subunit of the 6'-deoxychalcone synthase complex from alfalfa (SEQ ID NO: 16), glycyrrhiza (SEQ ID NO: 17) and soybean (SEQ ID NO: 18) allowing the relative positioning of these internal peptides from opium poppy (SEQ ID NO: 19).--

The paragraphs beginning at page 10, line 26, have been replaced with the following rewritten paragraphs:

-- **Figure 10.** cDNA sequence of *cor1.1*. (SEQ ID NO: 20)

Figure 11. cDNA sequence of *cor1.2*. (SEQ ID NO: 21)

Figure 12. cDNA sequence of *cor1.3*. (SEQ ID NO: 22)

Figure 13. cDNA sequence of *cor1.4*. (SEQ ID NO: 23)

Figure 14. Partial cDNA sequence of *cor1.5*. (SEQ ID NO: 24)

Figure 15. Partial cDNA sequence of *cor1.6*. (SEQ ID NO: 25)

--

The text beginning at page 12, line 1 and ending with line 22, has been replaced with the following rewritten text:

--

SEQ ID NO: 1

5'-GAA CTT TTT ATA ACT TCT AA-3' (derived from Peptide 14) and
     G   C   C   C   G   C
                 T

SEQ ID NO: 2

3'-GTG GTC TAA CGT CAI CGT TCI CCT TT-5' (derived from Peptide 7)
     A   A G   C

Resolution of an aliquot of the first PCR experiment by agarose gel electrophoresis revealed a mixture of DNA products, none of which was the expected band of approximately 480 bp. This was presumably due to the relatively low specificity of the degenerate primers coupled to a low abundance of codeinone reductase transcript. Another aliquot of the first PCR reaction mixture was, therefore, used as template for nested PCR with the following primers:

SEQ ID NO: 1

5'-GAA CTT TTT ATA ACT TCT AA-3' (same as Peptide 14 primer above) and
     G   C   C   C   G   C
                 T

SEQ ID NO: 3

3'-CAI CAC TTA GTT CAC CTT TAC-5' (nested primer derived from Peptide 16)
        G   C   C

to yield an approximately 360 bp DNA fragment and the following primers to yield an approximately 180 bp DNA product:

SEQ ID NO: 4

5-'GTI GTI AAC CAA GTI GAA ATG AGI CCI AC-3' (nested primer derived from
T G G TC Peptide 16) and

SEQ ID NO: 2

3'-GTG GTC TAA CGT CAI CGT TCI CCT TT-5' (same as Peptide 7 primer above)
A A G C

--

The text beginning at page 13, line 8 and ending at line 14, has been replaced with the following rewritten text:

--

SEQ ID NO: 5

5'-ATG GAG AGT AAT GGT GTA CCT-3' (located at the 5'-terminus) and

SEQ ID NO: 6

3'-TCT ACC ATT CAC TCC TGA CAG-5' (located in the 3'-flanking region)

followed by nested PCR with the following primer pair:

SEQ ID NO: 7

5'-ATG GCT AGC ATG GAG AGT AAT GGT GTA CCT ATG-3' (located at the
Nhe 1 5'-terminus) and

SEQ ID NO: 8

3'-CTT CTC AAG ACC CTA CTC TTC CTA CCT AGG GAA-5' (located at the
Bam HI 3'-terminus).--

#13 Copy

RE-RUN

PCT

RAW SEQUENCE LISTING DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:26

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

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 3 <110> APPLICANT: Kutchan, Toni M.
 4       Zenk, Meinhart H.
 5       Atkins, David G.
 6       Fist, Anthony J.
 8 <120> TITLE OF INVENTION: CODEINONE REDUCTASE FROM ALKALOID POPPY
10 <130> FILE REFERENCE: JJ-1825
12 <140> CURRENT APPLICATION NUMBER: US 09/937,665A
13 <141> CURRENT FILING DATE: 2001-09-26
15 <150> PRIOR APPLICATION NUMBER: PCT/AU00/00249
16 <151> PRIOR FILING DATE: 2000-03-24
18 <150> PRIOR APPLICATION NUMBER: AU PP 9463
19 <151> PRIOR FILING DATE: 1999-03-26
21 <160> NUMBER OF SEQ ID NOS: 25
23 <170> SOFTWARE: PatentIn version 3.2
25 <210> SEQ ID NO: 1
26 <211> LENGTH: 20
27 <212> TYPE: DNA
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34 <220> FEATURE:
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37 <223> OTHER INFORMATION: n = A or G
39 <220> FEATURE:
40 <221> NAME/KEY: misc_feature
41 <222> LOCATION: (6)..(6)
42 <223> OTHER INFORMATION: n = T or C
44 <220> FEATURE:
45 <221> NAME/KEY: misc_feature
46 <222> LOCATION: (9)..(9)
47 <223> OTHER INFORMATION: n = T or C
49 <220> FEATURE:
50 <221> NAME/KEY: misc_feature
51 <222> LOCATION: (12)..(12)
52 <223> OTHER INFORMATION: n = A or C or T
54 <220> FEATURE:
55 <221> NAME/KEY: misc_feature
56 <222> LOCATION: (15)..(15)
57 <223> OTHER INFORMATION: n = T or G
59 <220> FEATURE:
60 <221> NAME/KEY: misc_feature
61 <222> LOCATION: (18)..(18)
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RAW SEQUENCE LISTING DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:26

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

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     69 <211> LENGTH: 26
     70 <212> TYPE: DNA
     71 <213> ORGANISM: Artificial Sequence
     73 <220> FEATURE:
     74 <223> OTHER INFORMATION: PCR Primer
     77 <220> FEATURE:
     78 <221> NAME/KEY: misc_feature
     79 <222> LOCATION: (3)..(3)
     80 <223> OTHER INFORMATION: n = T or C
     82 <220> FEATURE:
     83 <221> NAME/KEY: misc_feature
     84 <222> LOCATION: (6)..(6)
     85 <223> OTHER INFORMATION: n = i
     87 <220> FEATURE:
     88 <221> NAME/KEY: misc_feature
     89 <222> LOCATION: (8)..(8)
     90 <223> OTHER INFORMATION: n = T or G
     92 <220> FEATURE:
     93 <221> NAME/KEY: misc_feature
     94 <222> LOCATION: (9)..(9)
     95 <223> OTHER INFORMATION: n = T or A
     97 <220> FEATURE:
     98 <221> NAME/KEY: misc_feature
     99 <222> LOCATION: (12)..(12)
    100 <223> OTHER INFORMATION: n = i
    102 <220> FEATURE:
    103 <221> NAME/KEY: misc_feature
    104 <222> LOCATION: (24)..(24)
    105 <223> OTHER INFORMATION: n = G or A
    107 <400> SEQUENCE: 2
W--> 108 ttnccncnng cnactgcaat ctgntg                                  26
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    112 <211> LENGTH: 21
    113 <212> TYPE: DNA
    114 <213> ORGANISM: Artificial Sequence
    116 <220> FEATURE:
    117 <223> OTHER INFORMATION: PCR Primer
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    121 <221> NAME/KEY: misc_feature
    122 <222> LOCATION: (4)..(4)
    123 <223> OTHER INFORMATION: n = T or C
    125 <220> FEATURE:
    126 <221> NAME/KEY: misc_feature
    127 <222> LOCATION: (10)..(10)
    128 <223> OTHER INFORMATION: n = T or C
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RAW SEQUENCE LISTING DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:26

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

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    136 <221> NAME/KEY: misc_feature
    137 <222> LOCATION: (19)..(19)
    138 <223> OTHER INFORMATION: n = i
    140 <400> SEQUENCE: 3
W--> 141 catntccacn tgattnacna c                                        21
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    147 <213> ORGANISM: Artificial Sequence
    149 <220> FEATURE:
    150 <223> OTHER INFORMATION: PCR primer
    153 <220> FEATURE:
    154 <221> NAME/KEY: misc_feature
    155 <222> LOCATION: (3)..(3)
    156 <223> OTHER INFORMATION: n = i
    158 <220> FEATURE:
    159 <221> NAME/KEY: misc_feature
    160 <222> LOCATION: (6)..(6)
    161 <223> OTHER INFORMATION: n = i
    163 <220> FEATURE:
    164 <221> NAME/KEY: misc_feature
    165 <222> LOCATION: (9)..(9)
    166 <223> OTHER INFORMATION: n = C or T
    168 <220> FEATURE:
    169 <221> NAME/KEY: misc_feature
    170 <222> LOCATION: (12)..(12)
    171 <223> OTHER INFORMATION: n = A or G
    173 <220> FEATURE:
    174 <221> NAME/KEY: misc_feature
    175 <222> LOCATION: (15)..(15)
    176 <223> OTHER INFORMATION: n = i
    178 <220> FEATURE:
    179 <221> NAME/KEY: misc_feature
    180 <222> LOCATION: (18)..(18)
    181 <223> OTHER INFORMATION: n = A or G
    183 <220> FEATURE:
    184 <221> NAME/KEY: misc_feature
    185 <222> LOCATION: (22)..(22)
    186 <223> OTHER INFORMATION: n = A or T
    188 <220> FEATURE:
    189 <221> NAME/KEY: misc_feature
    190 <222> LOCATION: (23)..(23)
    191 <223> OTHER INFORMATION: n = G or C
    193 <220> FEATURE:
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RAW SEQUENCE LISTING DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:26

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

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     195 <222> LOCATION: (24)..(24)
     196 <223> OTHER INFORMATION: n = i
     198 <220> FEATURE:
     199 <221> NAME/KEY: misc_feature
     200 <222> LOCATION: (27)..(27)
     201 <223> OTHER INFORMATION: n = i
     203 <400> SEQUENCE: 4
W--> 204 gtngtnaanc angtnganat gnnnccnac                                29
     207 <210> SEQ ID NO: 5
     208 <211> LENGTH: 21
     209 <212> TYPE: DNA
     210 <213> ORGANISM: Artificial Sequence
     212 <220> FEATURE:
     213 <223> OTHER INFORMATION: PCR primer
     215 <400> SEQUENCE: 5
     216 atggagagta atggtgtacc t                                        21
     219 <210> SEQ ID NO: 6
     220 <211> LENGTH: 21
     221 <212> TYPE: DNA
     222 <213> ORGANISM: Artificial Sequence
     224 <220> FEATURE:
     225 <223> OTHER INFORMATION: PCR primer
     227 <400> SEQUENCE: 6
     228 gacagtcctc acttaccatc t                                        21
     231 <210> SEQ ID NO: 7
     232 <211> LENGTH: 33
     233 <212> TYPE: DNA
     234 <213> ORGANISM: Artificial Sequence
     236 <220> FEATURE:
     237 <223> OTHER INFORMATION: Primer
     239 <400> SEQUENCE: 7
     240 atggctagca tggagagtaa tggtgtacct atg                            33
     243 <210> SEQ ID NO: 8
     244 <211> LENGTH: 33
     245 <212> TYPE: DNA
     246 <213> ORGANISM: Artificial Sequence
     248 <220> FEATURE:
     249 <223> OTHER INFORMATION: Primer
     251 <400> SEQUENCE: 8
     252 aagggatcca tccttctcat cccagaactc ttc                           33
     255 <210> SEQ ID NO: 9
     256 <211> LENGTH: 7
     257 <212> TYPE: PRT
     258 <213> ORGANISM: Artificial Sequence
     260 <220> FEATURE:
     261 <223> OTHER INFORMATION: Synthetic Construct
     264 <220> FEATURE:
     265 <221> NAME/KEY: misc_feature
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RAW SEQUENCE LISTING DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:26

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

```
266 <222> LOCATION: (1)..(1)
267 <223> OTHER INFORMATION: Xaa can be any naturally occurring amino acid
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W--> 271 Xaa Leu Gln Glu Leu Met Ala
272 1               5
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276 <211> LENGTH: 11
277 <212> TYPE: PRT
278 <213> ORGANISM: Artificial Sequence
280 <220> FEATURE:
281 <223> OTHER INFORMATION: Synthetic Construct
283 <400> SEQUENCE: 10
285 Val Leu His Gln Ile Ala Val Ala Arg Gly Lys
286 1               5                   10
289 <210> SEQ ID NO: 11
290 <211> LENGTH: 10
291 <212> TYPE: PRT
292 <213> ORGANISM: Artificial Sequence
294 <220> FEATURE:
295 <223> OTHER INFORMATION: Synthetic Construct
297 <400> SEQUENCE: 11
299 Asp Asp Asp Glu Leu Phe Ile Thr Ser Lys
300 1               5                   10
303 <210> SEQ ID NO: 12
304 <211> LENGTH: 16
305 <212> TYPE: PRT
306 <213> ORGANISM: Artificial Sequence
308 <220> FEATURE:
309 <223> OTHER INFORMATION: Synthetic Construct
311 <400> SEQUENCE: 12
313 Ile Pro Asp Val Val Asn Gln Val Glu Met Ser Pro Thr Leu Gly Gln
314 1               5                   10                  15
317 <210> SEQ ID NO: 13
318 <211> LENGTH: 7
319 <212> TYPE: PRT
320 <213> ORGANISM: Artificial Sequence
322 <220> FEATURE:
323 <223> OTHER INFORMATION: Synthetic Construct
326 <220> FEATURE:
327 <221> NAME/KEY: misc_feature
328 <222> LOCATION: (1)..(1)
329 <223> OTHER INFORMATION: Xaa can be any naturally occurring amino acid
331 <400> SEQUENCE: 13
W--> 333 Xaa Val Asn Glu Ile Pro Lys
334 1               5
337 <210> SEQ ID NO: 14
338 <211> LENGTH: 5
339 <212> TYPE: PRT
340 <213> ORGANISM: Artificial Sequence
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:27

Input Set : A:\JJ1825.ST25.txt
Output Set: N:\CRF4\05142004\I937665A.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 3,6,9,12,15,18
Seq#:2; N Pos. 3,6,8,9,12,24
Seq#:3; N Pos. 4,10,16,19
Seq#:4; N Pos. 3,6,9,12,15,18,22,23,24,27
Seq#:9; Xaa Pos. 1
Seq#:13; Xaa Pos. 1
Seq#:14; Xaa Pos. 1
Seq#:15; Xaa Pos. 5

VERIFICATION SUMMARY DATE: 05/14/2004
PATENT APPLICATION: US/09/937,665A TIME: 12:09:27

Input Set : **A:\JJ1825.ST25.txt**
Output Set: **N:\CRF4\05142004\I937665A.raw**

L:65 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
L:108 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:0
L:141 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
L:204 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
L:271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:0
L:333 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:0
L:353 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:0
L:373 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15 after pos.:0

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Biotechnology Systems Branch

FAX TRANSMISSION COVER SHEET

DATE: 05-14-2004 Total Number of Pages Faxed: 15 (Cov. Inc.)

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FROM: Mark Spencer
Voice Ph. Number: (571)272-2510
FAX Ph. Number: (571)273-0221

Message:

RSL Re-Runs for S/N: 09/937,665A and 10/343,002.